Studies in Australian grasses, 7[1]. Four new species of *Sporobolus* R. Br. (Poaceae, Chloridoideae, Sporoboleae) from Australia

Bryan K. Simon

Summary

Simon, Bryan K. (1993). Studies in Australian grasses 7. Four new species of *Sporobolus* R. Br. (Poaceae, Chloridoideae, Sporoboleae) from Australia. *Austrobaileya* 4(1): 57–66. New species, *Sporobolus blakei* from central and western Australia and *Sporobolus disjunctus*, *Sporobolus pamelae* and *Sporobolus partimpatens* from Queensland are described and compared with other Australian *Sporobolus* species.

Keywords: Poaceae, *Sporobolus* – Queensland, *Sporobolus blakei, Sporobolus disjunctus, Sporobolus pamelae, Sporobolus partimpatens.*

Bryan K. Simon, Queensland Herbarium, Meiers Road, Indooroopilly, Qld 4068, Australia

Introduction

In relation to the 'Flora of Australia' account and revisional studies of *Sporobolus* R. Br. pres-ently being undertaken with Surrey Jacobs of the New South Wales National Herbarium, four new species require description. Three of them were given their names by previous researchers on this genus, but never published. Jan De Nardi, formerly of the New South Wales National Herbarium, proposed the name *Sporobolus blakei* for the central Australian species in 1973, and Robyn Mills, formerly of the Waite Institute, Adelaide, proposed the names *Sporobolus disjunctus* and *Sporobolus partimpatens* for the Queensland species in a preliminary manuscript of a revision of Australian *Sporobolus* species prepared in the mid 1980s and kindly sent to me by David Symon when Ms Mills left the Waite Institute to take up employment in Perth. I collected the fourth species, *Sporobolus pamelae,* for the first time in April 1992, from the 'Desert Uplands' of central Queensland, during field work with John Thompson as part of his project to prepare a vegetation map of the region.

Sporobolus blakei De Nardi ex B.K. Simon, **sp. nov.** *S. elongato* R. Br. affinis sed basi vaginis fibris, laminis longioribus et complanatis, lemmatibus leviter brevioribus, staminibus duobus, semine latiore differt. **Typus**: Northern Territory, CENTRAL SOUTHERN DIVISION: Redbank Gorge, 20 April 1972, *P.K. Latz* 2483 (holo: BRI; iso: DNA).

Plants perennial with culms erect, to 80 cm tall, unbranched, 2–3-noded. Internodes glabrous or sparsely hairy. Leaves glabrous; sheaths distinctly fibrous at base of plant; ligule a membrane c. 0.3 mm long; blades usually flat, to 30 cm × 3 mm. Inflorescence to 32 × 2 cm, a panicle, spicate to semi-spicate, fully exserted at maturity. Primary branches to 2.5 cm long, not appressed to main axis, not whorled at the lowermost inflorescence node. Spikelets 1.5–1.8 × c. 0.7–0.9 mm, evenly distributed along the length of the branch, pedicels 0.7–0.9 mm long. Lower glume 0.6–0.7 mm long, nerveless, obtuse and frequently torn at apex. Upper glume 0.9–1.1 mm long, at least half the spikelet length, 1-nerved, acute, sometimes torn at apex. Lemma 1.5–1.8 × 0.7–0.9 mm, membranous, distinctly keeled, obtuse to truncate. Palea 1.3–1.7 mm long, membranous. Anthers 3, 0.6–0.7 mm long. Grain obovoid, angular in transverse section, c. 0.9 mm × 0.6 mm. **Fig. 1.**

---

[1] continued from *Austrobaileya* 3(4):669–681 (1992)

Accepted for publication 3 February 1993

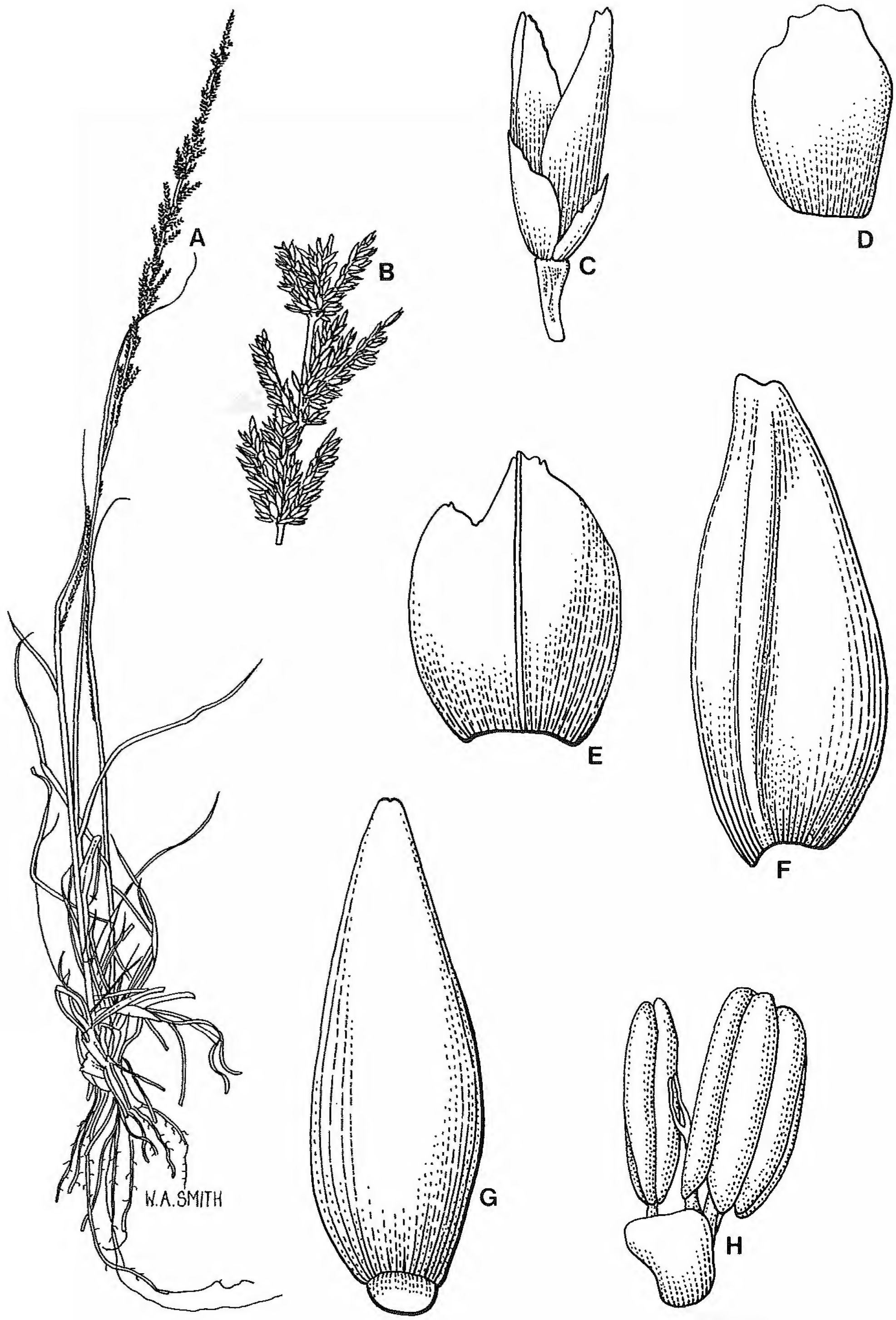


Fig. 1. *Sporobolus blakei*: A. habit × 0.5. B. portion of inflorescence × 2. C. spikelet, lateral view × 25. D. lower glume, back view. E. upper glume, back view. F. lemma, back view. F. palea, back view. H. flower. D–H × 40. All drawn from Nelson 484 (BRI).

Selected specimens examined**: Western Australia**. Fitzgerald District: Mt Hart homestead, Jun 1987, *Edinger* 467 (PERTH). Carnarvon District: Carnarvon, Mar 1981, *Stretch* s.n. (PERTH). Carnegie District: Warburton Mission, Aug 1962, *George* 4060 (PERTH). Giles District: Rawlinson Range, Aug 1958, *Hill* 910 & *Lothian* (AD, DNA). Austin District: Wongawol Station, Jul 1944, *Bennett* s.n. (PERTH). **Northern Territory**. Central Northern Division: Elkedra Station, Davenport Ranges, May 1977, *Latz* 6857 (BRI, DNA); Mt Doreen Station, Jan 1972, *Latz* 2043 (CANB, DNA, PERTH). Central Southern Division: Mount Sonder, Jul 1968, *Beauglehole* 27380 (BRI, DNA); Valley of the Eagles, Jun 1968, *Beauglehole* 20667A (BRI, DNA, NSW); Simpsons Gap National Park, Jun 1974, *Beauglehole* 45035 (BRI, DNA); Ormiston Gorge, Heavitree Range, Jun 1974, *Beauglehole* 45304 & *Carr* (BRI, DNA); Mt Putardi area, Apr 1972, *Latz* 2293 (BRI, CANB, DNA, PERTH); 25 miles [42 km] S of Alice Springs, Aug 1962, *Nelson* 484 (BRI, CANB, DNA); Palm Valley, Dec 1971, *Latz* 1900 (BRI, CANB, DNA); Tempe Downs Station, Feb 1973, *Henry* 667 (CANB, DNA); Olga Gorge, *Lazarides & Palmer* 267 (CANB, DNA); Umbeara Station, May 1988, *Latz* 5260 (DNA); Peterman Ranges, Oct 1971, *Latz* 1773 (DNA). **South Australia**. North-Western: *Helms* 6.1891 (AD, CANB, DNA). Lake Eyre: Witgara National Park, Sep 1986, *Weber* 9217 (AD, BRI, DNA). **Queensland**. Warrego District: 48 km NW of Hungerford, Sep 1971, *Stanton* s.n., AQ 0004485 (BRI). **New South Wales**. Northern Far Western Plains: Gum Vale, May 1971, *Milthorpe* 397 (NSW).

Distribution and habitat**:** *S. blakei* is distributed in all mainland states from central and western Australia within the arid zone of Jessop (1981), with the exception of a collection from the Kimberley region. The distribution of all herbarium specimens is shown in **Map 1**. It is found in or near places of accumulated moisture, creek beds, moisture depressions and watercourses.

Conservation status**:** Not considered to be threatened.

Etymology**:** Named for the late Dr S.T. Blake, formerly at BRI, who pioneered much of the work on the taxonomy of Australian grasses.

Notes**:** This species is closely related to *S. elongatus* R. Br. but differs in its basal fibrous leaf sheaths, generally longer and flattened leaf blades, slightly shorter lemma, two stamens and broader seeds. The specimen originally selected as type by De Nardi was *Beauglehole* 20667, but this is a mixed gathering with *Eragrostis parviflora* (R. Br.) Trin. I have assigned the number 20667A to the *Sporobolus blakei* collection and 20667B to the *Eragrostis parviflora* collection.

Sporobolus disjunctus R. Mills ex B.K. Simon, **sp. nov.** *S indico* L. affinis, sed paniculis interruptionibus, glumis inferis uninervis, rarenter flosculis in spicula duobus differt. **Typus:** Queensland, South Kennedy District: 9 miles [14.4 km] N of Avon Downs Station, *L. Adams* 1060 (holo: CANB (CANB 143738); iso: BRI (BRI 288512)).

Plant perennial with culms erect, to 80 cm tall, sparingly intravaginally branched at base, 2–5-noded. Internodes glabrous. Leaves glabrous; ligule a fringed membrane with marginal cilia c. 0.7 mm long; blades flat or involute, to 25 cm × 8 mm, strigose and scaberulous. Inflorescence to 25 × 0.8 cm, a panicle, spicate to semi-spicate, fully exserted at maturity. Primary branches to 2 cm long, appressed to the main axis in clusters, not whorled at the lowermost inflorescence node. Spikelets 2–2.3 × 0.6–0.7 mm, evenly distributed along the length of the branch, sessile or shortly pedicelled, pedicels to 2 mm long, rarely 2-flowered. Lower glume 0.8–1 mm long, 1-nerved, glabrous to scaberulous, membranous, acute. Upper glume 1.8–2 mm long, at least half spikelet length, 1-nerved, glabrous to scaberulous, membranous, acute. Lemma 2–2.3 × 0.6–0.7 mm, distinctly keeled, 1-nerved, glabrous to scaberulous, membranous, acute. Palea 1.9–2.1 mm long, shorter than lemma but longer than upper glume, glabrous to scaberulous, with a rounded apex. Anthers 2 or 3, 0.3–0.6 mm long. Grain asymmetrically ovoid, compressed in transverse section, 0.9 × 0.5 mm. **Fig. 2.**

Specimens examined**: Queensland**. Burke District: 82 km NE of Hughenden on road to Mt Emu Plains, Mar 1993, *Thompson* HUG203 & *Henderson* (BRI). South Kennedy District: Natal Downs Homestead, Jan 1987, *Dorney* 59 (BRI); Well Plains Station, Jul 1989, *Henn* AQ 456510 (BRI); 9 km S of Warregal, Feb 1978, *Anderson* 324B (BRI); Bingeringo Tank, May 1991, *Neldner* 3072 & *Thompson* (BRI, NSW). Leichhardt District: between Emerald and Peak Downs, Feb 1931, *Hubbard* 7954 (K). Maranoa District: 12 miles [19.2 km] NW of Mungindi, Apr 1952, *Collector unknown* AQ 306829 (BRI); N of Surat, Apr 1991, *Warrian* 890 (BRI). Darling Downs District: Goodah, W of Goondiwindi, Feb 1992, *Ross* AQ 542465 (BRI, NSW). **New South Wales**. North Western Plains: Burilda, W of Goondiwindi, May 1991, *Crane* AQ 506149 (BRI).

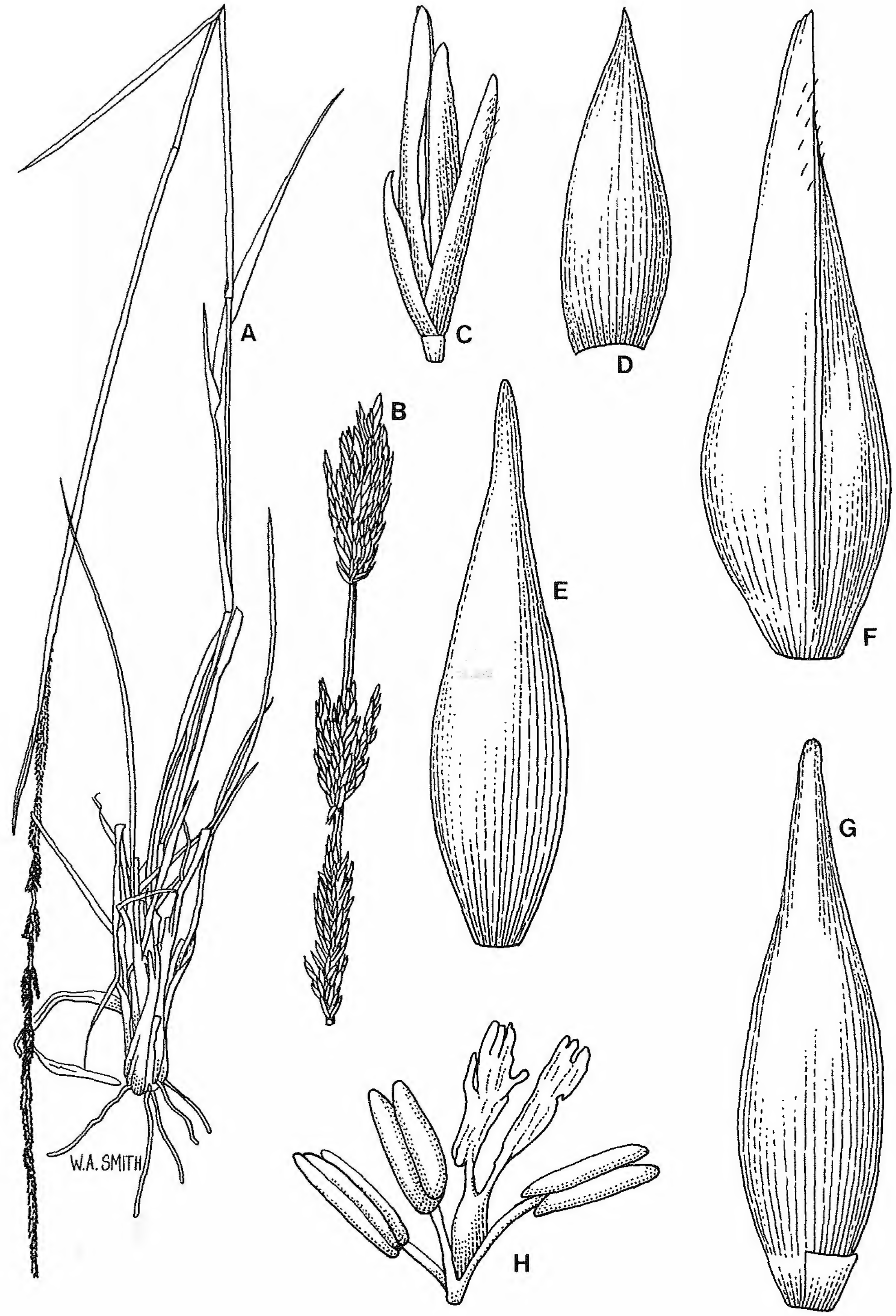


Fig. 2. *Sporobolus disjunctus*: A. habit × 0.5. B. portion of inflorescence × 2. C. spikelet, lateral view × 20. D. lower glume, front view. E. upper glume, front view. F. lemma, front view. G. palea, front view and one lodicule at base. H. flower. D–H × 40. All drawn from Adams 1060 (isotype, BRI).

***Distribution and habitat*:** On the basis of existing collections *S. disjunctus* has rather a disjunct distribution with a few collections from northern and central Queensland and others from areas near the Queensland-New South Wales border (**Map 1**). It is restricted to black cracking clay soils.

***Conservation status*:** 3K (Briggs & Leigh 1988).

***Etymology*:** Named for the disjunct nature of the inflorescence branches.

***Notes*:** *S. disjunctus* differs from *S. indicus* by the interrupted nature of the inflorescence branches (as opposed to the ± uninterrupted inflorescence in *S. indicus*), by the longer glumes and the one-nerved lower glume (nerveless in *S. indicus*). A second floret is sometimes developed in the spikelets of *S. disjunctus*, a situation also reported for other species of *Sporobolus* e.g. *S. mitchellii* (Trin.) C.E. Hubb. ex S.T. Blake with its occasional second floret (Clayton & Renvoize 1986) and *S. subtilis* Kunth with its rachilla process, indicating a reduction from the two floret condition. Other species of *Sporobolus* reported as having more than one floret, have been transferred to other genera (Baaijens & Veldkamp 1991). The genus *Sporobolus*, apart from it possessing spikelets with a single floret, is very close to *Eragrostis* (Phillips 1982) and the tribe *Sporoboleae* or subtribe *Sporobolinae*, set up to accommodate this single floret character state, is really an artificial grouping. The Australian endemic genus *Thellungia* (Hubbard 1933; Probst 1920; Stapf 1920)) has been placed in *Eragrostis* (Phillips 1982) on the basis of it having spikelets with 2 or 3 florets. However it has one-nerved lemmas as in all other species of *Sporobolus* and looks remarkably similar to *S. disjunctus*. Jacobs (1987) has drawn attention to the lack of agreement of generic circumscription of some chloridoid genera, including the distinction of *Sporobolus* and *Thellungia* from *Eragrostis*.

Sporobolus pamelae B.K. Simon, **sp. nov.** *S. myriantho* Benth. affinis sed glumis superis cum apicibus obtusis (sine apicibus acuminatis), spiculis longioribus, differt. **Typus.** Queensland, South Kennedy District: Cattle Creek moundspring, 3 km S of Doongmabulla Station, 22°05'39" S, 146°14'23" E, 1 Apr 1992, *E.J. Thompson* GAL 001 & *B.K. Simon* (holo: BRI; iso: AD, B, BRI, CANB, K, L, MEL, MO, NSW, PRE).

Plants perennial with culms erect, 80–120 cm tall, unbranched, 2–4-noded. Nodes glabrous. Internodes glabrous, longer than the associated leaf sheaths. Leaves glabrous; sheaths rounded on the back; ligule a fringe of hairs c. 0.5 mm long; blades 14–35 cm × 1–1.5 mm, involute, filiform, tapering to a narrow apex, attenuate at the base. Inflorescence 25–40 × 3–12 cm, open, fully exserted at maturity. Primary branches to 15 cm long, not appressed to main axis, as long as or longer than adjacent internodes, with spreading secondary branches, with spikelets loosely spaced, only the lowest branch slightly whorled. Spikelets 2.5–3 × 0.6–1 mm, evenly distributed along the length of the branch, lanceolate, pedicelled, 1-flowered; pedicels 4–12 mm long, very slightly scabrous, flexuous. Lower glume c. 1.5 mm long, triangular, nerveless, membranous, glabrous, obtuse. Upper glume c. 3 mm long, at least half spikelet length, faintly 1-nerved, rounded on the back, obtuse, glabrous. Lemma 2.5–3 × 1 mm, linear-lanceolate, not keeled, membranous, obscurely 3-nerved, truncate. Palea 3–3.2 mm long, with a longitudinal groove, membranous, obtuse. Lodicules c. 0.4 mm long. Anthers 3, c. 2 mm long. Grain not seen. **Fig. 3.**

***Distribution and habitat*:** *S. pamelae* is only represented by the type specimen collected at Doongmabulla Station (**Map 1**). It grows in an interesting ecological habitat known as a moundspring. It was the dominant species in the vegetation here (**Fig. 4**), which includes several other and possibly new species of flowering plants. These mounds and accompanying vegetation, developed by the springs of the Great Artesian Basin, are well known and documented (Habermehl 1982; Ponder 1986).

***Conservation status*:** 1K (Briggs & Leigh 1988).

***Etymology*:** This very attractive grass is named for my wife, Pam, who has endured my many absences from home on agrostological pursuits.

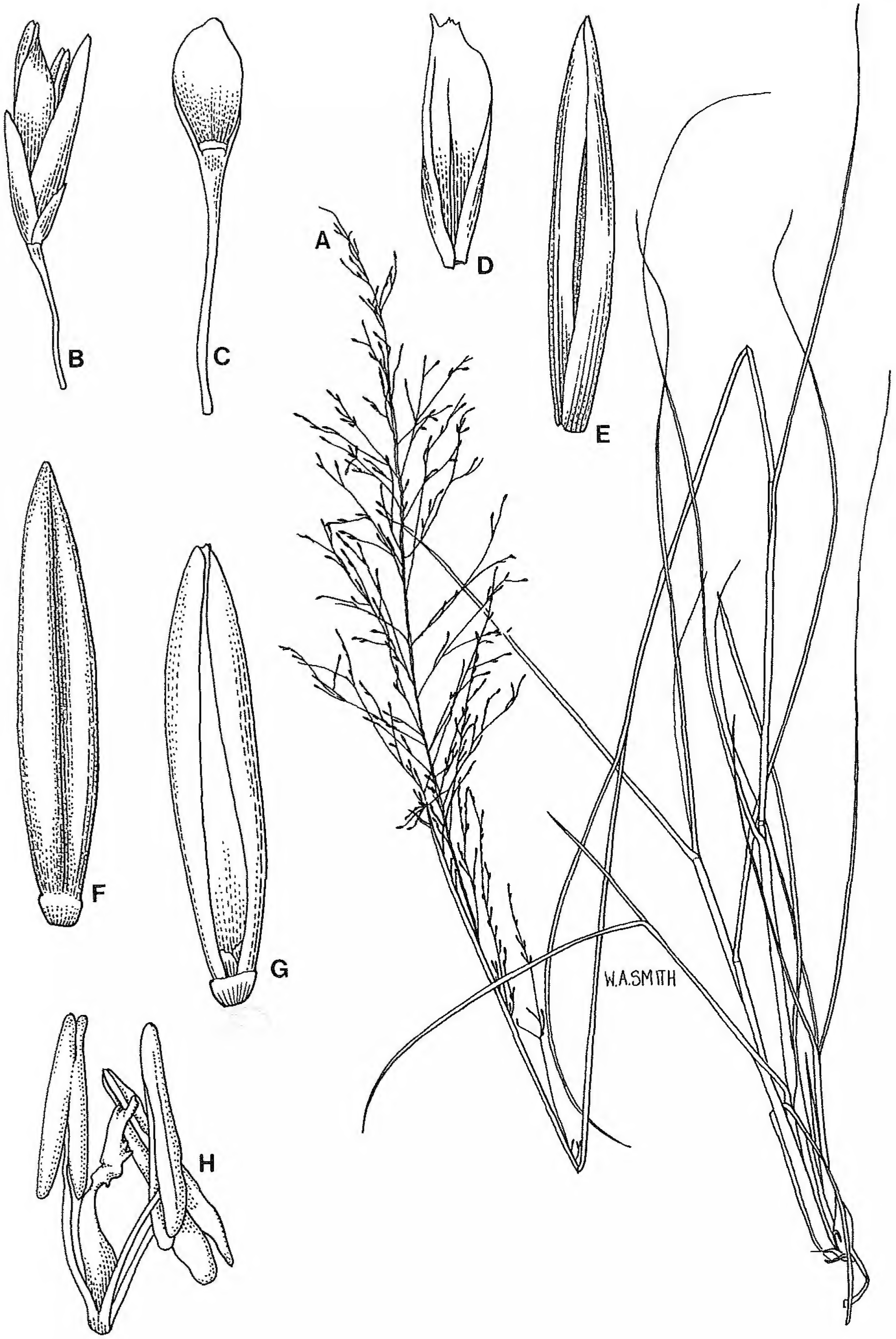


Fig. 3. *Sporobolus pamelae*: A. habit × 0.5. B. spikelet, lateral view × 10. C. lower glume, front view and pedicel. D. upper glume, front view. E. lemma, front view. F. palea, back view. G. palea, front view. H. pistil and stamens. C–H × 20. All drawn from Thompson GAL 001 & Simon (holotype, BRI).

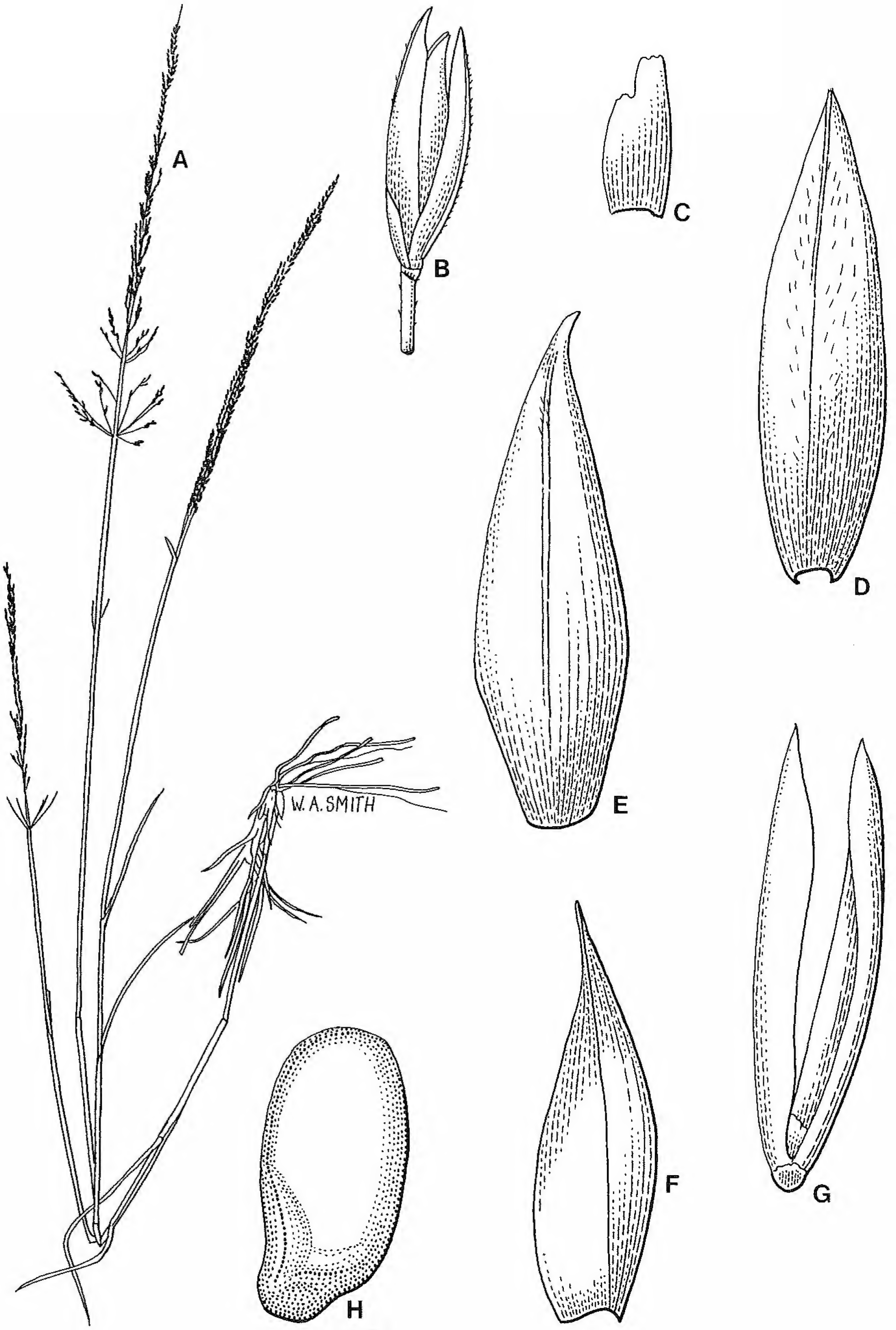


Fig. 4. *Sporobolus partimpatens*: A. habit × 0.5. B. spikelet, lateral view × 15. C. lower glume, back view. D. upper glume, back view. E. lemma, back view. F. palea, front view. G. split palea. H. grain. C–H × 30. All drawn from Thompson GAL 002 & Simon (holotype, BRI).

Notes: *S. pamelae* is quite unlike any other Australian species of *Sporobolus* and thus far is only represented by the type. In my attempt to discover a species with which to compare it for a diagnosis, I keyed it out in 'Flora of Tropical East Africa' (Clayton 1974) to *S. myrianthus* Benth. It certainly shows a remarkable resemblance to the one specimen of that species in BRI, differing in having larger spikelets (2.5–3 mm long in *S. pamelae*, c. 2 mm long in *S. myrianthus*), the apex of the upper glume being obtuse (not abruptly acuminate or mucronate) and the base of the plant having more robust roots. Both species have indurated basal leaf sheaths.

Sporobolus partimpatens R. Mills ex B.K. Simon, **sp. nov.** *S. actinoclado* Domin affinis sed glumis superis multo longioribus (aequans spiculam) et paniculis apertis tantum ad basim, differt. **Typus**. Queensland. South Kennedy District: sandy flat adjacent to Cattle Creek, 3 km S of Doongmabulla Station, 22°05'39"S, 146°14'23"E, 1 Apr 1992, *E.J. Thompson* GAL 002 & *B.K. Simon* (holo: BRI; iso: AD, BRI, CANB, K, L, NSW).

Plants perennial. Culms erect, to 60 cm tall, sparingly branched, 3–5-noded. Nodes glabrous. Internodes glabrous, longer than the associated leaf sheaths. Sheaths glabrous, with non-ciliate margins. Ligule a fringed membrane, 0.7–0.9 mm long. Leaf blades 1.5–12 cm × 40 mm, glabrous or occasionally with long slender hairs. Inflorescence a panicle, spicate to semi-spicate, fully exserted at maturity with main axis smooth, glabrous, ridged with elevated resinous lines. Primary branches c. 2.5 cm long, appressed to the main axis in the upper part, whorled at the lowermost inflorescence node. Spikelets 2–2.5 × 0.7–0.9 mm, sessile and pedicelled, pedicels to 2 mm long. Lower glume 0.8–1 mm long, membranous. Upper glume 2–2.5 mm long, ± as long as spikelet, acute. Lemma 2–2.5 × 0.7–0.9 mm, the surface appressedly pilosulose in upper part, acute. Palea slightly shorter than lemma. Anthers 3, 0.8–0.9 mm long. Grain ovoid, asymmetrical, compressed in transverse section, c. 1.1 mm × 0.6 mm. **Fig. 5.**

Specimens examined: **Queensland.** Mitchell District: S of Lake Mueller, Jun 1977, *McDonald* 2671 (BRI); Lake Mueller area, 29 km NE of Aramac, May 1979, *McDonald* 2907 (BRI); 28 km E of Barcaldine on road to Jericho, Jul 1975, *Beeston* 1397C (BRI). Locality Unknown: *K. Domin* 1435, PR (PR 524659 (photo, BRI)).

Distribution and habitat: Thus far *S. partimpatens* has been collected from three known areas of Queensland, one east of Barcaldine, one around the Lake Mueller area between Barcaldine and Aramac and another adjacent to the 'moundspring' locality of *Sporobolus pamelae* on Cattle Creek, Doongmabulla Station (**Map 1**). It grows on alluvial soils and claypans sometimes with associated open hummock grassland of *Triodia longiceps*.

Conservation status: 2K (Briggs & Leigh 1988).

Etymology: The epithet translates as 'partly spreading', probably referring to the divaricate basal branches of the inflorescence.

Notes: There is also a collection of this species by K. Domin in PR from an unknown locality and with the date of collection unknown, but presumably from Queensland.

Acknowledgements

I extend my thanks to Will Smith for the illustrations, to Peter Bostock for the preparation of the map using the computer program MapInfo, to the curators of AD, CANB, K, NSW, PERTH and PR for the loan of herbarium material, to the Australian Biological Resources Study for a grant to undertake studies on *Sporobolus* and to John Thompson for the very enjoyable field trip to the 'Desert Uplands' and for the photographs.

References

Baaijens, G.J. & Veldkamp, J.F. (1991). *Sporobolus* (Gramineae) in Malesia. *Blumea* 35: 393–458.

Briggs, J.D. & Leigh, J.H. (1988). *Rare or Threatened Australian Plants*. 1988 Revised Edition. Australian National Parks and Wildlife Service Special Publication No. 14. Canberra: Australian National Parks and Wildlife Service.

Clayton, W.D. (1974). *Sporobolus*. In W.D. Clayton, S.M. Phillips, & S.A. Renvoize, *Flora of Tropical East Africa*. Gramineae 2: 383.

Hebbermehl, M.A. (1982). *Springs in the Great Artesian Basin, Australia – their origin and nature*. Bureau of Mineral Resources, Australia, Report 235, 50 pp.

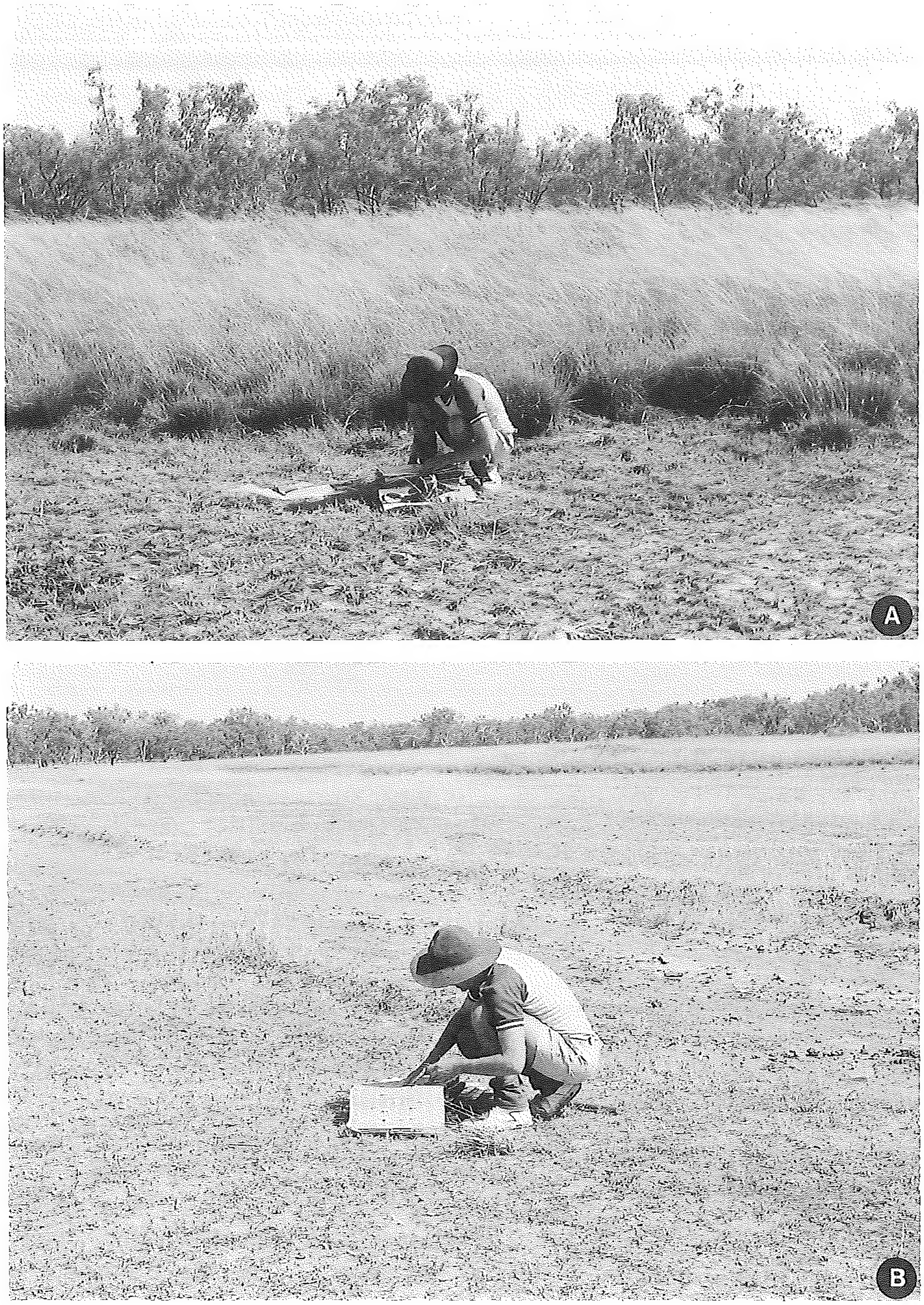
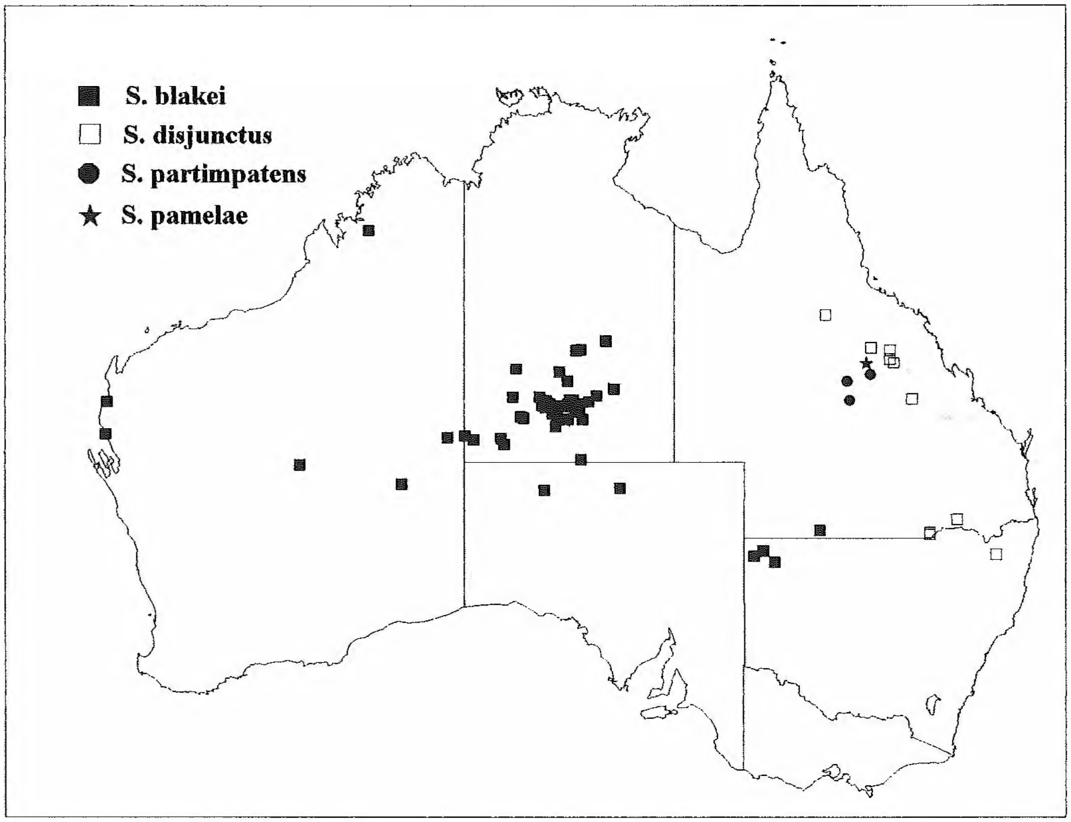


Fig. 5. A. pressing type specimen of *Sporobolus pamelae*, the prominent grass cover in the background, Cattle Creek moundspring, Doongmabulla Station. B. pressing type specimen of *Sporobolus partimpatens* from its habitat on sandy flat adjacent to Cattle Creek moundspring, Doongmabulla Station. *Sporobolus pamelae* zone in background. Photographs by John Thompson.



Map 1. Distribution of *Sporobolus blakei, S. disjunctus, S. partimpatens* and *S. pamelae.*

Hubbard, C.E. (1933). *Thellungia advena* Stapf. *Hooker's Icones Plantarum* 3184: 1–3.

Jacobs, S.W.L. (1987). Systematics of the chloridoid grasses. In T.R. Soderstrom, K.W. Hilu, C.S. Campbell & M.E. Barkworth (eds), *Grass systematics and evolution.* Washington D.C.: Smithsonian Institution Press .

Jessop, J. (ed.) (1981). *Flora of Central Australia.* Sydney: A.H. & A.W. Reed.

Phillips, S.M. (1982). A numerical analysis of the Eragrostideae. *Kew Bulletin* 37:133–162.

Ponder, W.F. (1986). Mound Springs of the Great Artesian Basin. In P. De Decker & W.D. Williams (eds), *Limnology in Australia.* Melbourne: CSIRO & Dordrecht: W. Junk.

Probst, R. (1920). Zweiter Beitrag zur Adventiv und Ruderalflora von Solothurn und Umgebung. *Mittlungen der Naturforschenden Gesellschaft Solothurn* 18: 17.

Stapf, O. (1920). *Thellungia*, a new genus of Gramineae. *Bulletin of Miscellaneous Information, Kew* 1920: 98.